

Greensheet

CS 152: Programming Language Paradigms
Spring 2016

San José State University
Department of Computer Science

Instructor Info

Name	Ahmad Yazdankhah	My name is difficult to pronounce!
Office	DH 282	It is a shared office and usually I don't use it!
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Website	Under construction!	Our official educational web tools is Canvas .
Phone	(408) 924-5060	Email is the best way to communicate!
Office Hours	TR 1915 – 2000; MW 1915 – 2030	By appointment

Class Info

	Section 02
Meeting time	TR 2000-2115
Classroom	MacQuarrie Hall 225
Course #	27500
Final exam	Wednesday, May 18 @ 1715-1930
	MacQuarrie Hall 225

Important Dates of Semester

Description	Day	Month	Day #	Comment
First day of instruction	Thursday	January	28	For MW classes, Monday February 1 st
Last day to drop	Tuesday	February	09	
Last day to add	Tuesday	February	16	
Daylight saving time	Sunday	March	13	
Start of Spring Break	Monday	March	28	Until Friday, April 1 st
Holiday	Thursday	March	31	Cesar Chavez Day
Last day of instruction	Monday	May	16	For TR classes, last day is Thursday May 12 th

Course Brief Info

Catalog Description

Programming language syntax and semantics. Data types and type checking. Scope, bindings, and environments. Imperative, object-oriented, functional and logic programming paradigms, and comparing them. Extensive coverage of a functional and logical language.

Prerequisites

CS 151 or CMPE 135	Object-Oriented Design	Grade C- or better
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The Department of Computer Science strictly enforces prerequisites. If you are not already pre-enrolled, you must come to the first class meeting and pick up an Add-Form from the instructor. If applicable, show the instructor your card that indicates you're a graduating senior. It will be the instructor's and the department decision whether or not to send you an add-code by email.

Any student who does not show up during the first two class meetings may be dropped by the instructor.

Required Text

Kenneth Louden and Kenneth Lambert, "Programming Languages: Principles and Practice, 3rd edition", Cengage Learning, 2012, ISBN-13: 978-1-111-52941-3

Further Readings

"Teach Yourself Scheme in Fixnum Days", Dorai Sitaram,
<http://www.ccs.neu.edu/home/dorai/t-y-scheme/t-y-scheme.html>

And the references at the end of each lecture note.

Course Detail Info

Course Learning Outcomes

1. To ensure that students gain an understanding of programming language design and language translation.
2. To achieve competence in a functional programming language.
3. To achieve competence in a logical programming language.

Student Learning Outcomes

Upon successful completion of this course, students should be able to:

1. Have a basic knowledge of the history of programming languages.
2. Have a basic knowledge of the procedural, object-oriented, functional, and logic programming paradigms.
3. Understand the roles of interpreters, compilers, and virtual machines.
4. Critique the design of a programming language.
5. Read and produce context-free grammars.
6. Write recursive-descent parsers for simple languages, by hand or with a parser generator.

7. Understand variable scoping and lifetimes.
8. Write interpreters for simple languages that involve arithmetic expressions, bindings of values to names, and function calls.
9. Understand type systems.
10. Understand the implementation of procedure calls and stack frames.
11. Produce programs in a functional programming language.

Programming Assignments

- There will be several programming assignments that are individual and team based. For the team based projects, **all team members will get the same grade.**
- Each team is responsible for choosing a team lead and dividing up the work among the team members. Each team member is personally responsible for participating and contributing to the team's work, and for understanding each part of the work for every assignment whether or not s/he worked on that part.
- **Students are required to read the assignment's requirement very carefully and implement exactly what it wants. You'll lose points for any violation from the requirements accordingly.**
- Programs must be appropriately documented via javadoc comments and should adhere to the coding style posted on the CS Department web page: http://www.cs.sjsu.edu/web_mater/java_code.html.

Exams

Every week, there would be a short quiz and there would also be two midterms, and a final exam. All examinations could be partially closed book (concepts) and partially open book (practical).

Instant messaging, e-mails, texting, tweeting, and any other type of communications with anyone else during the exams are strictly forbidden.

Grading Policy

Assignments	45%
Quizzes	15%
Mid #1	7%
Mid #2	13%
Final	20%
Total	100%

Nominal Grading Scale

From	To	Grade
97	100	A+
92	96.99	A
90	91.99	A-
88	89.99	B+
82	87.99	B
80	81.99	B-
78	79.99	C+
72	77.99	C
70	71.99	C-
68	69.99	D+
62	67.99	D
60	61.99	D-
0	59.99	F

Your final grade can be adjusted depending on your level and quality of participation in the class activities and on your team members' assessments of your performance.

To practice time management, late submissions will lose 20% of the assignment total score and an additional 20% for each 24 hours after the due date.

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See [University Policy F13-1](#) for more details at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

Workload

Success in this course is based on the expectation that students will spend, **at least 6 – 10 hours per week** for working on the homework, team works, and the programming assignments.

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12-3](#) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

Classroom Protocol

- **Be on time! Coming late is disruptive.**
- My classes are always interactive. So, participate in the class' activities as much as you can.
- **Ask good questions** and answer to the questions (in class and in the forum) as much as you can and **get extra credit** for them!
- Your cell phone should be in silent mode and should not be used during the lectures.
- **Wireless laptop is required and it should remain closed** until I inform you that it is needed for a particular activity.

Attendance is recommended, but is not mandatory, except for exam dates. Let's make a comfortable and respectful environment for presenting any ideas.

NOTE that [University policy F69-24](#) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. **Attendance per se shall not be used as a criterion for grading.**”

University Policies

General Expectations, Rights and Responsibilities of the Student

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU's policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See [University Policy S90-5](#) at <http://www.sjsu.edu/senate/docs/S90-5.pdf>. More detailed information on a variety of related topics is available in the [SJSU catalog](#), at <http://info.sjsu.edu/web-dbggen/narr/catalog/rec-12234.12506.html>. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's [Catalog Policies](#) section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the [Academic Calendars webpage](#) at

http://www.sjsu.edu/provost/services/academic_calendars/. The [Late Drop Policy](#) is available at <http://www.sjsu.edu/aars/policies/latedrops/policy/>. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the [Advising Hub](#) at <http://www.sjsu.edu/advising/>.

Consent for Recording of Class and Public Sharing of Instructor Material

[University Policy S12-7](#), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course and the following items to be included in the syllabus:

- “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”
 - It is suggested that the greensheet include the instructor's process for granting permission, whether in writing or orally and whether for the whole semester or on a class by class basis.
 - In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
- “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

Academic integrity

Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy S07-2](#) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The [Student Conduct and Ethical Development website](#) is available at <http://www.sjsu.edu/studentconduct/>.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. [Presidential Directive 97-03](#) at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the [Accessible Education Center](#) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

Course Schedule

Note: this is a tentative schedule and is subject to change but with fair notice.

Day #	Date	Topics, Activities	Readings	Homework	Exams
1	01/28	Greensheet in detail; A big picture of the course; My background;			
2	02/02	History of programming languages; Assembly, FORTRAN, ALGOL	1.1		
3	02/04	Abstraction, Paradigms, Language definition, . . . , Future of programming languages	1.2 – 1.6		
4	02/09	Good programming language criteria	2.1		Quiz 1
5	02/11	Efficiency, Regularity, Security, Extensibility; Forming teams	2.2 – 2.5	Term Project	
6	02/16	Lambda Calculus 1	3.6		Quiz 2
7	02/18	Lambda Calculus 2, Programs as Function	3.6, 3.1	HW 1	
8	02/23	Scheme programming language 1	3.2		Quiz 3
9	02/25	Scheme programming language 2	3.2	PRG 1	
10	03/01	Midterm 1	End of Chap 3		Midterm 1
11	03/03	Scheme programming language 3: Demos	Online materials		
12	03/08	More advanced concepts of Scheme	Online materials		Quiz 4
13	03/10	Object-oriented paradigm 1	5.1, 5.2, Online		
14	03/15	Object-oriented paradigm 2	Online materials		Quiz 5
15	03/17	Logic Programming, Review of logic, Propositional logic	Chap 4, Online	HW 2	
16	03/22	1 st feedback; Predicate calculus, Entailment	Online materials		Quiz 6
17	03/24	Horn Clauses, Resolution and Unification	Online materials	HW 3	
18	03/29	Spring Break			
19	03/31	Spring Break			
20	04/05	Prolog 1	Online materials		Quiz 7
21	04/07	Prolog 2	Online materials	PRG 2	
22	04/12	Midterm 2	End of Chap 7		Midterm 2
23	04/14	Unification, Search tree, Recursion	4.3, Online	HW 4	
24	04/19	Parallel Programming 1	Chapter 13		Quiz 8
25	04/21	Parallel Programming 2	Online materials		
26	04/26	Teams' Presentations		Proj. Pres.	
27	04/28	Teams' Presentations		Proj. Pres.	
28	05/03	Java Internals 1	Online materials		Quiz 9
29	05/05	Java Internals 2	Online materials	Postmortem	
30	05/10	Garbage Collector: Concepts, algorithms	Online materials		Quiz 10
31	05/12	2 nd students' feedback about the course; Wrapping up the semester; where we are; what would be the next step? Review for final		Proj. Docs	

Final exam	Section 02 (TR 2000-2115)
Date and Time	Wednesday, May 18 @ 1715-1930
Venue	MacQuarrie Hall 225